simply to let our law stand as it is and enforce it in the courts. . . . We have a very few homœopathic practitioners in Alabama, but a considerable number of doctors who, graduated in eclectic schools, have availed themselves of the advantages we have to offer them, and have become good working members of our organization."[42]

In the same year Illinois passed its first law, which was amended in 1887. It is unnecessary to enter into the details of medical legislation during the next fourteen years. It is merely to be stated that laws were passed as follows:

Year.	*State or Territory.*
1880	Vermont.
1882	Georgia, Rhode Island.
1883	Maine, Michigan, North Carolina.
1884	New Mexico.
1885	Indiana.
1886	Iowa.
1887	California, Idaho, Minnesota, Virginia, Wisconsin, Wyoming.
1888	Tennessee.
1889	Delaware, Kansas, Missouri, Montana, Oregon.
1890	New Jersey, North Dakota, Ohio, South Carolina, Washington.
1891	Colorado, Nebraska, West Virginia.
1892	Florida, Maryland, Mississippi, Utah.
1893	Arkansas, Arizona, Connecticut, Kentucky, New York, Oklahoma, Pennsylvania, South Dakota.

(To be continued.)

Original Articles.

THE FREQUENCY OF RENAL ALBUMINURIA, AS SHOWN BY ALBUMIN AND CASTS, APART FROM BRIGHT'S DISEASE, FEVER, OR OBVIOUS CAUSE OF RENAL IRRITATION.[1]

BY FREDERICK C. SHATTUCK, M.D., OF BOSTON.

IN no branch of human activity, perhaps, can more striking illustrations be found of the dangers of hasty conclusions from insufficient data than in medicine. This is no reflection on our calling. It naturally flows from the fact that our knowledge of many things is still very imperfect, while the demands for the practical application of our knowledge are constant and imperative. The sick man wants instant help, and cannot wait while doubtful points are being settled. Medicine is more than an art, less, in a sense, than an exact science. The clinical significance of albumin and casts affords one of these illustrations. The chemical preceded the microscopical examination of the urine, and the latter first made it possible to determine with any accuracy the portion of the urinary tract from which the albumin is derived. The presence of casts shows that the true renal tissue is involved, and was for some time held to be diagnostic of Bright's disease. I well remember the grave prognosis which the discovery of albumin and casts was thought to necessitate when I was a hospital interne, not much more than twenty years ago. Perhaps I incorrectly interpreted my teaching — students sometimes do — but I think this was at that time generally regarded by the profession as damning evidence. Albumin and casts meant Bright's disease, and that meant an inevitably and more or less rapidly fatal disease. Further experience and the irresistible logic of facts has led to such changes in these views that considerable discussion has been held as to whether albuminuria might not be physiological, so common is it found to be, so little bearing may it have on the vigor or longevity of its possessor. Into this discussion I do not propose really to enter. Absolute physical perfection is occasionally found in the human being; but the ideal and the real are nearly as sharply contrasted in the more purely bodily as in the moral qualities. Whether there be a physiological albuminuria is largely a matter of definition of the word physiological.

Much ingenuity has been devoted to the discovery and application of tests of extreme delicacy for albumin. My friend and colleague, E. S. Wood, assures me that for clinical and qualitative purposes none of these tests can compare with the old heat and nitric acid tests; and I am glad to see similar views expressed very recently by D. D. Stewart,[2] of Philadelphia. These are the tests used in the cases which I have analyzed. A cloudiness of the boiled upper layer of urine in the test-tube after the addition of acetic acid, and the opaque zone with nitric acid are therefore considered proof positive of the presence of albumin, as a negative result is proof of its absence. To my eye the heat test is the more delicate of the two, but I know that all do not find it so. Vanderpoel,[3] in a recent paper on albuminuria without manifest organic renal lesion, has collected the literature of the subject and justly calls attention to the discrepancy which exists between the percentages of different observers examining considerable numbers of presumably healthy persons. Chateaubourg finds albuminuria in 84 per cent. of 701 examined; Grainger Stewart in 31 per cent. of 407 examined. Others put the percentage still lower, but even this discrepancy is sufficient to show that something is the matter. Doubtless Millard is right in believing that Chateaubourg, who used Tanret's test in many of his examinations, mistook mucin or some other non-albuminous organic substance for albumin. As far as I know casts have not been looked for as carefully as albumin. The search for them demands a good deal of time if the sediment is scanty; and they may easily be overlooked when present if ample time is not allowed the urine to settle, and if skill in the selection of portions of the sediment is not exercised. Experience has led me to be skeptical when the statement is made to me that a distinct trace of albumin is present, but that casts as well as other formed elements, such as blood and pus, are absent. In such cases I have repeatedly found that more careful examination revealed the casts.

These bodies still enjoy a worse reputation in the minds of the laity than albumin, as well as in the minds of the profession in general. Patients are alarmed by the knowledge that there are casts in their urine, much as they used to be by hearing that they had a murmur in their hearts.

For five or six years now I have been more and more particular to have a thorough examination of the urines of patients seeking my advice made by competent men, quite irrespective of the nature of the complaint which brought the patient. The frequency with which albumin and casts, chiefly hyaline and finely granular of small diameter, was reported in

[1] Paper read at the Ninth Annual Meeting of the Association of American Physicians, Washington, D. C., Thursday, May 31, 1894.

[42] Dunglison, Coll. & Clin. Rec., 1890, xi, 11.

[2] Philadelphia Medical News, May 5, 1894.

[3] Medical Record, November 11, 1893.

those at or beyond middle life entirely apart from any other evidence of renal mischief, attracted my attention. This led to the preservation of the reports of those of fifty years of age or more, and more recently also of the younger patients. Consequently I deal with larger figures relatively or absolutely at the later ages. I now regret that I did not begin my collection on a more comprehensive basis. All the same, it does not seem probable that the result would be very materially modified. In the decade of twenty to thirty I believe that a larger number of cases would reduce the percentage of those with renal albuminuria, and I think also that larger figures would show the condition to be quite as frequent between eighty and ninety as between seventy and eighty; but I cannot regard these sources of error as serious.

In the collection of these cases I have excluded all those with fever; all in which such well-known renal irritants as bile and sugar were present, no matter how small in amount; and also those in which examination rendered it probable that the mechanical effect of crystalline formation in the kidneys was directly responsible for the albumin and casts.

In the division of cases reported as showing albumin and no casts, no cases are included in which there was sufficient blood or pus, either from the vagina or lower urinary passages, to account for the reaction. In many of these I am convinced that more careful search would have revealed casts. Cases of cardiac and other organic disease are included, but I have tried to omit all those in which passive congestion could account for the findings. Of course, all cases of unquestioned Bright's disease are excluded. In short, the attempt has been made to determine approximately how frequently renal albuminuria and casts are encountered in the urine in the ordinary run of adults who consult a doctor, but present no evidence outside of the urine of primary or secondary renal disease. Some sixty of the patients were hospital cases, partly medical, partly surgical, suffering from widely varying maladies or injuries. No record has been kept as to the time at which the urines of my cases were voided. The larger number probably were passed on rising in the morning; many were passed at mid-day in my office; some both morning and evening; not a few were mixed specimens of the twenty-four hours.

TABLE.

Age.	No. of Cases.	Albumin and Casts.	Albumin and no Casts.	No Albumin or Casts.
20-30	25	8, or 32%	3, or 12%	14, or 56%
30-40	39	9, or 23%	4, or 10%	26, or 66%
40-50	47	26, or 55%	3, or 6%	18, or 38%
50-60	99	64, or 65%	11, or 11%	24, or 24%
60-70	57	42, or 74%	5, or 9%	10, or 17%
70-80	16	16, or 100%	00	00
80-90	14	11, or 79%	00	3, or 21%

The personal equation can be eliminated from my results for the reason that the examination was made in, roughly speaking, nearly equal proportion by four different observers, and a few by two others, all competent to distinguish mucous from renal casts. The small percentage of cases in which albumin was found without casts shows, I think, that no serious suspicion can attach to my results on the ground that other substances were often mistaken for albumin. In the great majority of cases but a single examination was made, but in a fair number there were two or more.

The table needs little explanation. It shows that the percentage of urines containing albumin and casts rises steadily with each decade from the fourth to the eighth, while those free from albumin and casts are in steadily decreasing percentage, and the proportion of those containing albumin but no casts remains nearly the same throughout. The number of cases in which casts were found without albumin was so small that these have not been classified.

The question remains as to the significance of these results. The pathological meaning is not easy of absolute proof. The class of patients who form the basis of my statistics are slow to die, and office and hospital patients are easily lost sight of. A considerable number of the patients I know to be alive, and apparently as well as when albumin and casts were discovered a number of years ago. In only two have I notes of autopsies. In one patient of eighty-five death was the result mainly of old age, and the kidneys were exceptionally healthy to the naked eye. In another of eighty-six years death was due to sudden uræmia supervening on prostatic enlargement necessitating repeated catheterization, cystitis, and impacted calculus at the vesical end of the left ureter; the kidneys were cystic and atrophic, especially in the cortices. Albumin and casts were found four years before death, and yet the general health was remarkably good for a person of upwards of eighty. In some of the cases albumin and casts were undoubtedly due to active hyperæmia or to irritation of the kidneys, and was perhaps transitory; but it is my belief that the facts in my table are best explained on the theory that the albumin and casts are the expression of senile renal atrophy, especially as far as the higher decades go.

There is no internal organ in which it lies in our power to detect so unerringly minute and slight changes as in the kidney. The heart, lungs, and blood-vessels as a whole are far less accessible to our examination. Age is not a matter of years, nor do we grow old symmetrically. I see no other reasonable explanation for the progressive increase in the frequency of albumin and casts as age advances. Whether this pathological doctrine be true or not the clinical significance admits, to my mind at least, of no doubtful interpretation. My anxiety is not awakened either for the present or the future by the report that a faint trace of albumin and hyaline and finely granular casts of small diameter are found in the urine of a patient after the age of fifty, provided that the kidneys are doing sufficient work as is shown by the twenty-four-hour excretion of solids, and provided that there are no symptoms.

Three years ago I was consulted by two brothers, fifty-two and fifty-five years of age, who had been urgently solicited to take out life insurance policies for one hundred thousand dollars each. But the ardor of the company was cooled when it was found that their urines contained a slight trace of albumin and casts, and their anxieties were awakened. Albumin and casts were constantly found in several examinations during the succeeding year; but the men were and remain perfectly well. The urines were rather concentrated. In patients under fifty albumin and

casts do not disturb me anything like as much as they did formerly. The important practical point is that they are not necessarily the precursors of serious kidney disease, and that their presence does not inevitably demand very careful regulation of the life and constant medical supervision.

In a certain proportion of cases, how large this proportion may be it will take years to determine, interstitial changes will reach a degree to shorten life, advancing more or less rapidly. It is not in our power at present to distinguish accurately which these cases are. Some help is afforded by the close estimation of solids in the twenty-four-hour urine; but in the average individual the reserve balance of kidney power is sufficient to permit of extensive renal impairment without curtailment of the ordinary daily work. The reserve may be diminished or gone; but if the reserve is not drawn upon too much or at all no apparent stringency is felt. We can grant that renal albuminuria is always pathological. Chronic pharyngitis is also pathological. It may be heresy, but I cannot resist the feeling that we are coming to believe that the clinical significance of the one is not necessarily greater than that of the other. I shall follow up my cases as far as I can and hope to be able in the course of years to throw further light on this important practical question. Life insurance companies are right in refusing risks reported as presenting albumin and casts. Life insurance is more like the French than the English criminal law; — it holds that innocence must be proved beyond reasonable doubt. But I have no doubt that risks are daily accepted by the best companies where an expert examination would detect albumin and casts. Few examiners apply the heat and nitric acid tests in a manner to try their full delicacy, and a microscopical examination is practically not demanded. Even if it were it would not ordinarily be sufficiently careful to be of much value.

Finally, my results may be summed up in the following conclusions:

(1) Renal albuminuria, as proved by the presence of both albumin and casts, is much more common in adults quite apart from Bright's disease or any obvious source of renal irritation than is generally supposed.

(2) The frequency increases steadily and progressively with advancing age.

(3) This increase with age suggests the explanation that the albuminuria is often an indication of senile degeneration.

(4) Though it cannot be regarded as yet as absolutely proved, it is highly probable that faint traces of albumin and hyaline and finely granular casts of small diameter are often, especially in those past fifty years of age, of little or no practical importance.

PELVIC INFLAMMATIONS.[1]

BY LEONARD WHEELER, M.D., WORCESTER, MASS.

THE subject of Pelvic Inflammation is one of great importance to every practitioner; for the condition is very common, and, for two reasons beyond inherent difficulties, it is not easy to diagnosticate. These two reasons for the difficulty in diagnosis are, first, that in its present aspect the subject is so novel that only the younger men among us learned anything of it in the medical school; second, that any degree of expertness in diagnosis requires the handling of a good many cases.

The pathological history of pelvic inflammations has been long and varied, but the salient points are interesting, and may be made very brief. Up to 1850 there was nothing extraordinary. Correct post-mortem observations had been made and recorded. Forty years ago, however, Nonat in France, followed by West and Simpson in Great Britain, and they again by Emmet in this country (of course, there are other names in plenty, but these were leaders), placed the seat of all these pelvic indurations and suppurations in the cellular tissue of the pelvis. It is wrong to say that these men based their ideas unduly on what they were able to feel during life, on clinical appearances and signs rather than the revelations of the post-mortem table. Autopsies do give strong credence to this view. It is only abdominal surgery, after all, that has proved it false. Where the pelvic inflammation has gone on to a fatal result, this cellular tissue has become extensively involved, and it is quite impossible to determine the point of origin of the disease. The suppurative process gets into this cellular area and follows it along, just as Schlesinger's air and liquid glue followed it between the folds of the broad ligament, along the psoas muscles, inward around the cervix, outward to the inguinal ring and downward between vagina and rectum. Having felt the disease during life and in its earlier stages apparently in the broad ligament, and after death finding a vast suppuration involving this very cellular area, it was natural enough to conclude that the disease had been all the time an affection of the cellular tissue, and that the diseased tubes always found with it were secondary. All this time, however, the opposite and correct view was stoutly maintained by Aran and his followers. He insisted that the masses felt during life were the same as those found so often after death from other causes as well as this pelvic inflammation, namely, diseased Fallopian tubes.

In 1857 appeared the first account of Bernutz's remarkable researches on the nature and pathology of pelvic inflammations. He clearly described the disease clinically; and he showed pathologically that it was a disease of the tubes and ovaries accompanied by peritonitis, and that cellulitis had no influence in causing the symptoms, that, in fact, it rarely existed at all as a primary disease except as a phlegmon in puerperal cases. This is the accepted doctrine of to day, in the past few years made plain by hundreds of operations for the radical cure of that large class of cases until recently regarded and treated as chronic cellulitis.

Notwithstanding this thorough work and its thorough discussion for years, the opposite theory still had its supporters, and would have had to the present day but for the revelation of Tait's operation, so-called.

In 1872 Battey did his first oöphorectomy, and the discussion and operations following prepared men's minds for the favorable reception of Tait's operation. Tait may have done some operations before, but the table in his book "Diseases of Women" begins with 1880. The operation for removal of diseased appendages was not done in this country until 1882. In 1883 it began to be much talked about, and has been ever since. The more it was discussed, the more attention was diverted from cellular tissue and fastened upon Fallopian tubes, though men were slow of conversion. Emmet held his ground firmly until 1888 or 1889.

It seems strange that so common and so grave a dis-

[1] Read before the Worcester Society for Medical Improvement, April 4, 1894.